

North South University
Department of Electrical and Computer Engineering
CSE 231L: Digital Logic Design Lab
Lab 06: BCD to seven segment decoder

A. Introduction:

An ABCD to seven segment decoder is a combinational circuit that converts a decimal digit in BCD to an appropriate code for the selection of segments in an indicator used to display decimal digit in a familiar form. The seven outputs of the decoder (a, b, c, d, e, f, g) select the corresponding segments in the display, as shown in figure (a). The numeric display chosen to represent the decimal digit is shown in figure (b).

Each element (a, b, c, d, e, f, g) of the seven segment display is turned on when a logic low is applied to its corresponding input pin.

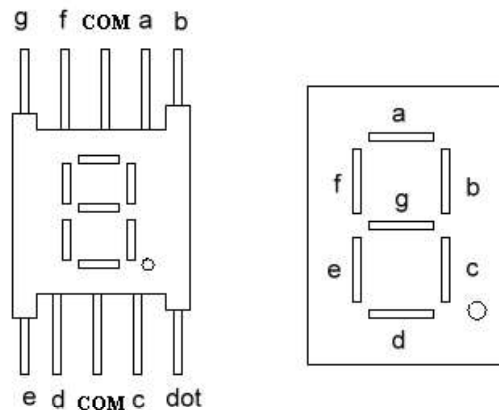


figure (a) Seven-Segment Display

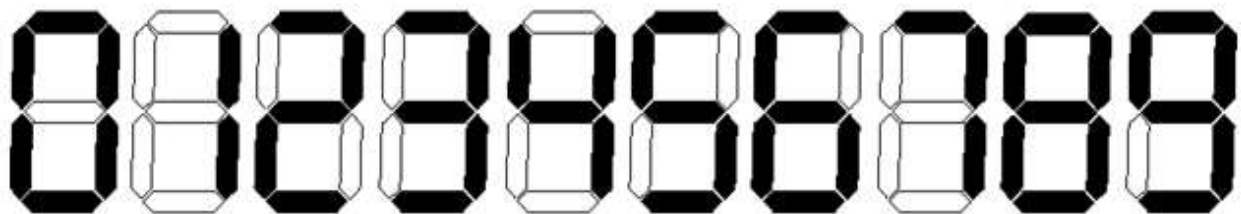
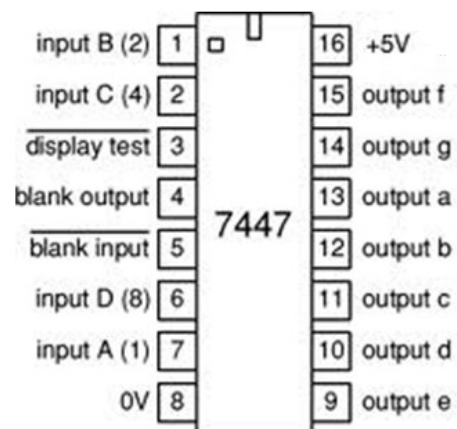


FIGURE (b) Display of decimal digits with a 7-segment device.

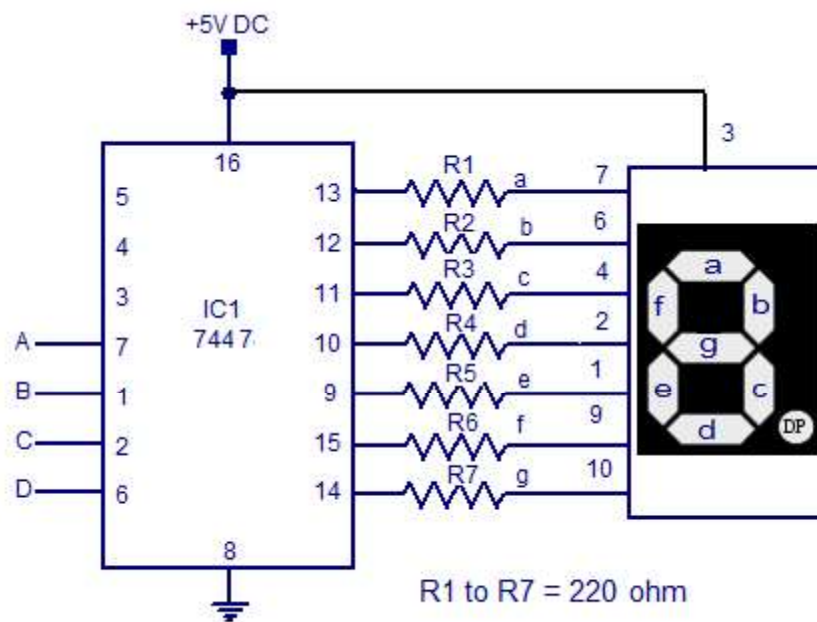
B. Equipments:

- Trainer board
- IC 7447, resistors, seven segment display
- Wires for connection

Pin Configuration of 7447:



Circuit Diagram:



Truth Table:

Decimal	Inputs				Outputs						
	D	C	B	A	a	b	c	d	e	f	g
0	0	0	0	0							
1	0	0	0	1							
2	0	0	1	0							
3	0	0	1	1							
4	0	1	0	0							
5	0	1	0	1							
6	0	1	1	0							
7	0	1	1	1							
8	1	0	0	0							
9	1	0	0	1							

C. Report

1. Draw logic diagram for the above truth table.